

Improving Stormwater Quality



The City of Houston, Harris County, the Harris County Flood Control District and the Texas Department of Transportation have teamed up through a Joint Task Force (JTF) to address Houston's stormwater pollution prevention efforts and requirements of the National Pollutant Discharge Elimination System (NPDES) stormwater permit program.

Background:

In 1998, the Environmental Protection Agency (EPA) Region 6 in Dallas issued an NPDES permit to the JTF. The JTF has been recognized as being consistent, economical, and efficient by the EPA and they have commended the JTF for their unity and cooperation involved in the environmental efforts of each of the four entities. The Houston/Harris County community will be moving toward the Texas Pollutant Discharge Elimination System (TPDES) that has now completed its fifth year with the NPDES permit.

Problem:

Stormwater is an increasingly serious concern because it impairs the quality of water resources. Stormwater, when produced by rain or snowmelt flowing over the land, captures debris, chemicals, hazardous wastes, and/or sediment. These contaminants then make their way to drainage systems that flow directly into rivers, lakes, wetlands, or bays. The polluted stormwater runoff can affect the health of plants, fish,

animals, and people, as well as reduce the recreational value of water resources.

Urbanization also has a major impact on the quality of local streams because it alters what and how stormwater flows in each watershed. Construction activities inherent to urbanization replace natural groundcover with impervious surfaces such as buildings, roads, and parking lots that do not allow rainfall to penetrate the soil.

Without the presence of vegetation, stormwater is rapidly converted into runoff, meaning that a greater volume of water reaches drainage systems faster, resulting in increased flooding. Moreover, most stormwater is contaminated with pesticides, fertilizers, pet waste, automotive by-products, floatable debris, and other toxic materials that pour directly into downstream waters.

Dr. John Jacob, director of the Texas Coastal Watershed Program, said urban planning is very important because as cities expand, so do impervious surfaces.

“By making communities denser, cities will better control their growth, drastically improving water quality,” Jacob said. “The pattern of development is the single most important part of preserving our natural environment.”

Jacob also said that as polluted stormwater becomes a key contributor to the declining quality of water bodies, strong enforcement of stormwater regulations and compliance with these regulations has become essential.

The Clean Water Act (CWA) was enacted to decrease or eliminate pollution sources from industrial sites that are exposed to stormwater runoff. The CWA, along with the EPA, has authorized the NPDES permit program and requires industrial locations to implement a Stormwater Pollution Prevention Plan.

In order to implement a Stormwater Pollution Prevention Plan, nine sections must be fulfilled. These sections include a project description, best management practices (BMPs), structural control practices, permanent stormwater controls, other water controls, approved state and local proposals, maintenance and inspections of controls, and pollution deterrence measures for non-stormwater discharges.

Best management practices are the primary method to regulate stormwater. These practices aim at decreasing the quantity of contaminants polluting water resources. BMPs consist of sediment, erosion, and stormwater management controls. Most BMPs focus on managing pollution from agricultural regions, automotive facilities, construction and industrial sites, forestry locations, and residential areas. These BMPs provide standard procedures to better manage stormwater runoff and maintain or improve water quality.



“The Texas Coastal Watershed Program is involved in city landscaping projects in which fertilizers and pesticides are restricted,” Jacob said. “This program also works with Houston area cities and the Harris County Flood Control District to develop wetlands in order to route and cleanse stormwater.”

Public education is needed to support the implementation of stormwater programs and to communicate the significance of pollution prevention. Educational and outreach programs are initiated by the Texas Coastal Watershed Program, such as Marissa Sipocz's Wetland Restoration Team and Chris LaChance's Water Smart Landscaping Program. The Wetland Restoration Team actively works with urban children to teach them the importance of water quality.

Other programs and organizations in the Houston area were also created to enhance stormwater quality. The Galveston Bay Estuary Program is a program of the Texas Commission on Environmental Quality (TCEQ) that intends to restore, preserve, and safeguard estuaries that are in danger of being polluted by eliminating the number of floatables that pass through streams into the bay.

Managing stormwater is key in maintaining the security and quality of our water resources. Controlling stormwater by both its quality and quantity entails minimizing interferences with its natural flow. By proper design and regulation, the impact of urbanization and pollution on local watersheds can be considerably reduced. 💧